

What Is Claimed As New And Is Intended To Be Secured By Letters Patent Is:

1. Cross-linked polyvinyl alcohol fibers prepared from a water-soluble polyvinyl alcohol, which satisfy the following requirements:

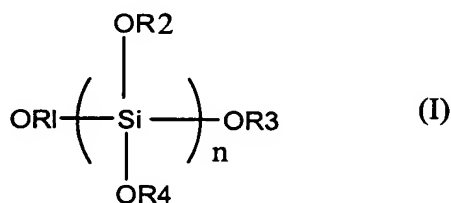
(1) a water absorption in water at 30°C ranging from 10 to 100 times the weight of the fibers;

(2) a fiber diameter in water at 30°C as a result of absorbing water ranging from 2 to 10 times the diameter of the fibers not having absorbed water; and

(3) a melting point ranging from 160 to 220°C, and a heat of fusion ranging from 40 to 100 J/g.

2. The polyvinyl alcohol fibers as claimed in claim 1, which are cross-linked with a cross-linking agent that forms a cross-linked structure by hydrogen bonds and/or an ester bonds or ether bonds to the polyvinyl alcohol, and which have a degree of crosslinking of from 0.01 mol % to 1 mol %.

3. The polyvinyl alcohol fibers as claimed in claim 1, which are cross-linked by the introduction into polyvinyl alcohol of a silane monomer or oligomer of the following formula (I), or a polyacrylic acid or a salt of polyacrylic acid, and which dissolves to an extent of at least 90 % in boiling water at 98° C:



wherein R¹ to R⁴ each independently represent hydrogen, an alkyl group having from 1 to 5 carbon atoms, or an acetyl group, and n ranges from 1 to 10.

4. The polyvinyl alcohol fibers as claimed in claim 1, which are prepared from PVA modified by monomer units which comprise at least 1 mole % of the PVA material.

5. The polyvinyl alcohol fibers as claimed in claim 4, wherein the modifying monomer units are selected from the group consisting of ethylene, allyl alcohol, itaconic acid, acrylic acid, vinylamine, maleic anhydride and its ring cleaved derivatives, sulfonic acid

containing vinyl compounds, vinyl esters of fatty acids having at least 4 carbon atoms, vinylpyrrolidone and compounds of these monomers that are derived by partially or completely neutralizing the ionic groups therein.

6. The polyvinyl alcohol fibers as claimed in claim 1, wherein the fibers have a heat of fusion ranging from 40 J/g to 70 J/g and a melting point ranging from 160° to 210° C.

7. The polyvinyl alcohol fibers as claimed in claim 1, wherein the fiber diameter expands by a factor of from 4 to 8 times.

8. A method for producing the polyvinyl alcohol fibers of claim 1, which comprises: introducing a cross-linking agent and/or a cross-linkable polymer into a water-soluble polyvinyl alcohol by reaction in a drying, drawing or heat-treating step, by dissolving the polymer in a spinning solvent or an extraction solvent in the presence of a catalyst in any stage of the polymer-dissolving step to the drying step, wherein the overall draw ratio of the fibers in the drawing step is a factor of at least 3 times.

9. The method according to claim 8, wherein the solvent by which a spinning liquid is prepared is water, DMSO, dimethylacetamide, dimethylformamide, N-methylpyrrolidone, a polyalcohol, mixtures of these solvents, mixtures of these solvents with a swelling metal salt and mixtures of an organic solvent of this group with water.

10. The method according to claim 8, wherein the polymer concentration in the spinning liquid ranges from 8 to 40 %.

11. The method according to claim 8, wherein the polymer in the spinning liquid is spun into a coagulation bath containing a coagulation solvent under the condition of a weight ratio of coagulation solvent/spinning solvent ranging from 25/75 to 95/5.

12. The method according to claim 11, wherein the coagulation bath temperature is not greater than 30° C.

13. The method according to claim 11, wherein the coagulation solvent is an aqueous solution of a salt selected from the group consisting of Glauber's salt, sodium chloride and sodium carbonate.

14. The method according to claim 8, wherein the cross-linking agent is an aldehyde, an epoxy compound, a carboxylic acid an isocyanate or a silanol.

15. The method according to claim 8, wherein the aldehyde cross-linking agent is introduced into the polymer by a solution having an aldehyde concentration of 1 to 20 g/liter.

16. A non-woven fabric, which comprises the polyvinyl alcohol fiber of claim 1 and has a polyvinyl alcohol fiber content ranging from 5 to 100 % by weight and an area retention while wet ranging from 20 to 120 %.